

Plaintiffs' Exhibit 116 (Redacted)

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA**

Alexandria Division

UNITED STATES, et al.,)	
)	
Plaintiffs,)	
v.)	No. 1:23-cv-00108-LMB-JFA
)	
GOOGLE LLC,)	
)	
Defendant.)	

**DECLARATION OF ROBIN S. LEE
IN SUPPORT OF PLAINTIFFS' OPPOSITION TO
GOOGLE'S MOTION FOR SUMMARY JUDGMENT**

Robin S. Lee, PhD., being duly cautioned, declares as follows:

1. I am over 21 years old and am competent to testify about the matters in this Declaration based on my personal knowledge.
2. Attached hereto as Exhibit A is a true and correct copy of the December 22, 2023, Expert Report of Robin S. Lee, PhD. Attached hereto as Exhibit B is a true and correct copy of the February 13, 2024, Expert Rebuttal Report of Robin S. Lee, PhD, along with associated errata. Attached hereto as Exhibit C is a true and correct copy of the March 4, 2024, Expert Supplemental Report of Robin S. Lee, PhD.
3. I authored the attached Expert Reports identified in Item (2) above and understood at the time I signed them that they were being prepared for use in this litigation. I am prepared to testify at trial, under oath, to the matters set forth in these reports. My statements set forth in these reports, as modified by associated errata, are true and correct to the best of my knowledge.
4. The exhibits attached to the reports described in Item (2) are true and correct copies.

I declare under penalty of perjury that the foregoing statements in this Declaration are true and correct.

Dated: *May 10, 2024*

Signed: 

Robin S. Lee, PhD.

County and State: *SUFFOLK COUNTY, MA*

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION**

United States of America, *et al.*,

Plaintiffs,

v.

Google LLC,

Defendant.

Case No. 1:23-cv-00108-LMB-JFA

Hon. Leonie H. M. Brinkema

EXPERT REBUTTAL REPORT OF ROBIN S. LEE, PHD

February 13, 2024

my opinions that publisher ad servers, ad exchanges, and advertiser ad networks for open-web display advertising comprise relevant antitrust product markets.

IV.A.1. Relevant antitrust product markets do not contain all substitutes for a given set of products

- (61) Relevant markets identify products over which market power can be profitably exercised. Importantly, relevant markets will not generally contain *all potential substitutes or constraints for a product*. As I noted in my initial report,

The key consideration when defining markets for monopolization claims is whether those excluded substitutes pose a *significant enough competitive constraint* on products contained within the market so as to prevent a hypothetical monopolist of those products from exercising market power and charging prices above competitive levels. By excluding alternative products that would be unlikely to constrain a monopolist (e.g., because a sufficient number of consumers view those alternatives as poor substitutes for products within the market), market definition facilitates the calculation of market shares and concentration measures that do not overstate the competitive significance of distant substitutes.¹⁰⁶

- (62) Dr. Israel and I agree on some aspects of market definition. In particular, he and I agree that market definition for this case focuses on “the products in question (here Google’s ad tech products)” and that when evaluating relevant markets, economists assess demand-side substitution.¹⁰⁷ Moreover, as noted above, he does not appear to disagree with the appropriateness of the HMT for determining product market boundaries.¹⁰⁸
- (63) Despite this common ground, the way in which Dr. Israel proceeds is biased towards an overly broad market and does not appropriately evaluate whether narrower market is valid. In essence, Dr. Israel’s approach is to first identify (implicitly all) potential constraints on a given product, and only then assess whether all of those constraints are sufficient to prevent the exercise of market power.¹⁰⁹
- (64) However, market definition does not generally start with identifying *all* potential constraints, as Dr. Israel asserts. For monopolization claims, market definition identifies a set of products over which a

¹⁰⁶ Lee Initial Report, § IV.A.2.

¹⁰⁷ Israel Report, ¶¶ 150–151.

¹⁰⁸ Israel Report, ¶¶ 157–158.

¹⁰⁹ Israel Report, ¶¶ 150–151, (“The primary purpose of market definition is **to identify a set of products (and firms that produce them) that constrain** the strategic choices (e.g., price and quality) made by the firm in question (here Google) regarding the products in question (here Google’s ad tech products). **Once the relevant set of constraints is identified, one can then assess whether those constraints are sufficient** to prevent the exercise of monopoly or market power, a question I turn to in the next section (Section V).”) (emphasis added).

hypothetical monopolist could possess and exercise significant market power and focuses attention on where the competitive effects of particular conduct are most likely to occur. A standard approach is to begin with the product(s) under scrutiny (here, particular ad tech products offered by Google) and, if appropriate, the most meaningful competitive constraints and products over which competitive concerns may arise. One then evaluates whether this set of products could profitably be monopolized; if not, the market is then expanded, and the HMT performed again. Proceeding in this fashion recognizes the fact that it is unnecessary to control (or eliminate) *all* potential constraints or substitutes for a monopolist to exercise significant market power.¹¹⁰

- (65) As noted above, a relevant market will often exclude products that *some* customers view as substitutes for products within the market.¹¹¹ For example, in my opening report I discussed the example of a hammer and a screwdriver. A screwdriver and screw may accomplish some of the same tasks as a hammer and nail (e.g., hanging a picture on a wall) but there are other tasks that hammers are uniquely suited for that a screwdriver could not as easily substitute for.¹¹² A monopolist of hammers could likely impose a small but significant price increase on hammers without many people switching to screwdrivers.
- (66) In this matter, the products in question are the tools used by advertisers and open-web publishers to transact web display advertising. The key question is whether excluded substitutes prevent a hypothetical monopolist of products within a relevant product market from exercising market power.
- (67) Dr. Israel's approach leads to broader markets that overstate the competitive significance of distant substitutes and obscure the harm that can result from monopolization. Applying Dr. Israel's methodology to the hammer and screwdriver example shows the problem with his approach. By beginning with all potential constraints on a hammer manufacturer's strategic choices, screwdrivers

¹¹⁰ Dr. Israel seems to assert that *market definition* only involves identifying a set of products that constrain the products in question. His market definition discussion in Section IV of his report is focused on that question, without giving a clear sense for how large or small that set should be. He says he considers the question of whether those constraints sufficiently prevent the exercise of monopoly or market power in his assessment of monopoly power. *See* Israel Report, ¶ 150 (“The primary purpose of market definition is to identify a set of products (and firms that produce them) that constrain the strategic choices (e.g., price and quality) made by the firm in question (here Google) regarding the products in question (here, Google’s ad tech products). Once the relevant set of constraints is identified, one can then assess whether those constraints are sufficient to prevent the exercise of monopoly or market power, a question I turn to in the next section (Section V).”). As I discussed in my opening report (Lee Initial Report, ¶ 247, 249–250), an assessment of market definition necessarily involves an analysis of the relative strength of competitive constraints, and typically focuses on the most meaningful of those. Dr. Israel departs dramatically from this principle in his market definition analysis. His preferred relevant market consists of a large set of products with dramatically varying functionality, customers, and prices, including a broad swath of both substitute and complementary products. I discuss the problems with Dr. Israel’s preferred “market for ad tech tools as a whole” in more detail in Section V.F below.

¹¹¹ United States Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, August 19, 2010 (hereinafter, “2010 HMG”), § 4.1.1 (“Groups of products may satisfy the hypothetical monopolist test without including the full range of substitutes from which customers choose. The hypothetical monopolist test may identify a group of products as a relevant market even if customers would substitute significantly to products outside that group in response to a price increase.”). *See also*, Lee Initial Report, ¶ 256. 2023 HMG § 4.3.

¹¹² Lee Initial Report, ¶ 259.

would likely be included in that set, along with other hardware tools (including rubber mallets, heavy wrenches) and potentially other household items (e.g., cast iron pans). Starting with this broad set of constraints, one might then conclude that a monopolist of all hardware tools and heavy household items could charge prices above competitive levels.

- (68) However, such a market (even though passing the HMT) would not necessarily be an appropriate relevant antitrust product market for evaluating a monopolization claim over hammers. The reason is that such a broad market, by including very distant substitutes, would more likely obscure rather than illuminate the ability of a hypothetical monopolist of hammers to exercise market power. For example, a hammer monopolist would likely have a small share in this candidate market, and someone using Dr. Israel's reasoning might then conclude that a hammer monopolist would have little ability to exercise market power and harm competition.
- (69) The flaws in Dr. Israel's approach are compounded by his focus on firms rather than products. In his explanation of his market definition approach, the focus is on firms, and products appear in parentheses: as he states, "the relevant market(s) should generally be defined to include all close competitors to the firm (and its relevant products) whose conduct is at issue."¹¹³
- (70) Dr. Israel's backwards approach leads him to mistakenly identify firms including TikTok and Snapchat as significant enough constraints over a monopolist of particular open-web display ad tech products, despite these firms not selling products that are meaningfully close substitutes to the products at issue in this matter.¹¹⁴ He also focuses on Amazon and Meta as important competitive constraints for Google's ad tech products for open-web display advertising, even though Amazon and Meta's display ad products largely serve their own inventory and not those of open-web publishers.¹¹⁵
- (71) That is not to say that Google does not compete with those firms in some line of business, or that these other firms do not offer products that are a competitive constraint to some degree on Google's ad tech products—the relevant question is whether any excluded product is a significant enough

¹¹³ Israel Report, ¶¶ 150–151.

¹¹⁴ See e.g., Israel Report, ¶¶ 27 ("Indeed, a proper market share analysis shows that Meta is the largest competitor in the ad tech industry, not Google, and that Google's share is declining while Meta, Amazon, and TikTok, among others, are experiencing growth") and 31 ("Google faces strong competition from any other firm that has attractive digital properties that it can use to compete for advertisers in competition with Google, including Meta, Amazon, TikTok, Microsoft, and many others.") and 383 ("Any argument that Google has a 'monopoly' fails for this simple reason: Google competes against Meta's \$50 billion U.S. digital advertising business (much bigger than Google in terms of display ad revenue), Amazon's large and rapidly growing advertising business, Microsoft's established advertising business that it has continued to expand through recent acquisitions and exclusive deals, and TikTok's explosively growing advertising business, in addition to many other competitors both inside and outside of Plaintiffs' alleged markets.") and 314 ("Plaintiffs' alleged publisher ad server market excludes publishers who use their own in-house ad server, such as Meta and other publishers like Amazon, Snapchat, and TikTok (among others).").

¹¹⁵ See e.g., Lee Initial Report, ¶ 439 noting that "Google designates its owned-and-operated properties and Facebook and Amazon as part of the 'unaddressable' segment of the web for its sellside display business..., reflecting that this web inventory is not available to third-party ad tech products." Facebook Audience Network exited open-web display in 2020 (Lee Initial Report, Appendix M). Amazon and Facebook's tools primarily serve their O&O inventory (Lee Initial Report, n. 31). Amazon's TAM and UAM are header bidding solutions (Lee Initial Report, ¶ 58).

competitive constraint to prevent Google (or a hypothetical monopolist) from exercising significant market power over publisher ad servers, ad exchanges, or advertiser ad networks for open-web display advertising. Dr. Israel has failed to demonstrate that this is the case for any product excluded from the relevant markets defined in my initial report.

IV.A.2. Assessments of substitution among ad tech products at prevailing prices can succumb to the “Cellophane Fallacy”

- (72) Dr. Israel and I agree that market definition focuses on customer substitution.¹¹⁶ However, as is commonly understood by economists, assessing substitutability between products for the purposes of market definition when it is possible that prevailing prices already exceed competitive prices risks overstating the significance of more distant substitutes.¹¹⁷ This is because at elevated prices, customers would more likely substitute to alternatives that would not otherwise have been close substitutes at more competitive prices. Ignoring this point is commonly known as the “Cellophane Fallacy,” and can lead to markets that are misleadingly broad for the purposes of evaluating market power.¹¹⁸
- (73) Dr. Israel argues that the Cellophane Fallacy “does not eliminate the need to assess evidence of customer substitution as part of the market definition inquiry in this case.”¹¹⁹ Although customer substitution is important to consider, for the purposes of the HMT, it is substitution at competitive price levels that informs whether a hypothetical monopolist can exercise market power. When there is valid concern (and direct evidence) that prices for products have already been subject to the exercise of significant market power, there are categories of evidence other than substitution patterns at prevailing prices that inform whether a market contains enough close substitutes to pass the HMT.¹²⁰

¹¹⁶ Lee Initial Report, ¶ 247; Israel Report, ¶ 153 (“Economists assess reasonable interchangeability from the perspective of the customer(s) (here advertisers and publishers) and thus the market definition exercise typically depends on demand-side substitution (i.e., substitution across ad tech tools by advertisers and publishers in response to relative changes in price and/or quality).”).

¹¹⁷ Lee Initial Report, ¶ 251 (“[C]ontrast, for monopolization claims, the HMT considers customer substitution patterns at the benchmark of competitive prices. This is because an important concern is that *prevailing prices may already reflect the exercise of substantial market power by the alleged monopolist*. At such elevated prices, consumers would likely substitute away from the alleged monopolist’s products to alternatives were the alleged monopolist to impose a further price increase—even if those alternatives are not close substitutes for the alleged monopolist’s products *were the monopolist’s products priced more competitively*. When there is a concern that prevailing prices (or product qualities) depart significantly from those that would otherwise obtain in a more competitive environment, relying on observed customer substitution patterns at existing price or quality levels risks overstating the competitive significance of more distant substitutes that customers only turn to after a set of products has already been monopolized.”). (emphasis in original).

¹¹⁸ Lee Initial Report, n. 340.

¹¹⁹ Israel Report, ¶ 167.

¹²⁰ Lee Initial Report, ¶¶ 253–254.

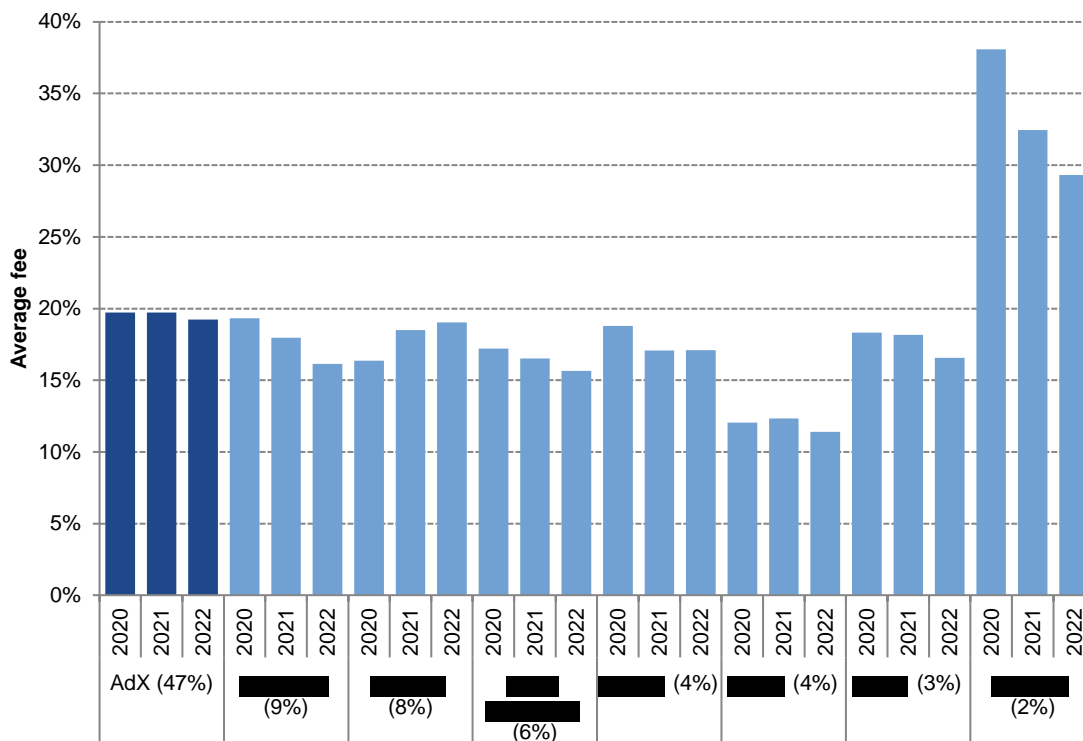
V.C.2.a. Dr. Israel's comparisons of AdX's take rate to other exchanges are misleading

(459) In the version limited to indirect web non-video impressions, AdX's take rates are higher than every other exchange pictured except for ██████, which had a 2% US impression share in 2022.⁷²³ See Figure 29.

[illegible]

Expert Rebuttal Report of Robin S. Lee, PhD

Figure 29. Dr. Israel's estimate of US ad exchange fees for indirect web non-video advertising (2020–2022)



Source: Backup materials for Israel Report, Figure 75: Israel exchange panel (see Appendix B for details); Backup materials for Lee Initial Report, Figure 91: Exchange panel.

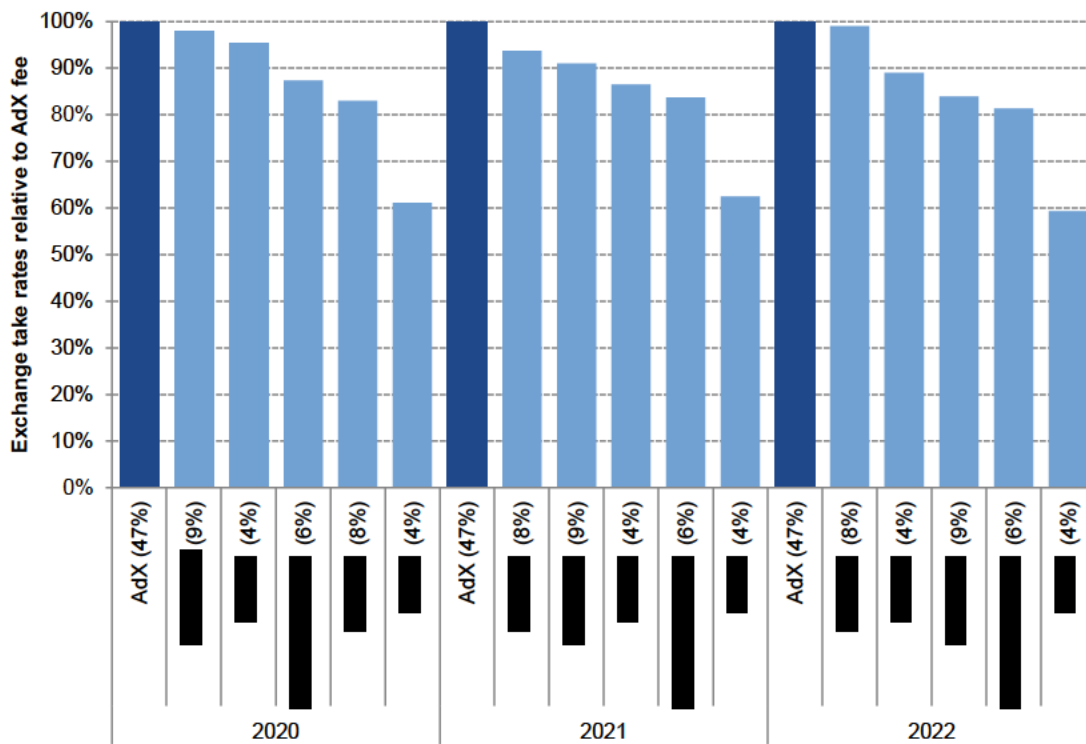
Notes: The figure is limited to US indirect web non-video transactions. In my initial report I presented worldwide fees for AdX and third-party exchanges. See Lee Initial Report, Figure 54. Exchanges are ordered by their share of US indirect open-web display impressions in 2022. The legend contains the share of US indirect open-web display impressions in 2022 in parentheses for each exchange. Sample includes exchanges for which the data allow me to calculate take rates for indirect open-web display.

- (460) Thus, focusing on ad exchange fees for open-web indirect display transactions, Figure 29 presents patterns that are consistent with Figure 55 in my initial report. In that figure, I presented AdX's open-web indirect display take rate against the weighted-average take rate among third-party exchanges for 2018–2022. Comparing AdX's take rate to other exchanges, and taking into account their relative sizes, shows that during this time period, AdX maintained a take rate higher than the average take rate of its rivals.

[REDACTED]

- (461) The difference in AdX's take rate relative to its rivals is substantial. For example, comparing a 20% take rate and an 18% take rate, an 18% take rate is two percentage points lower, but this translates to 10 percent lower.
- (462) To see this more clearly, Figure 30 illustrates these take rate differences relative to AdX in percentage terms (i.e., normalizing AdX's 20% reported take rate to 100%); I include only those ad exchanges with at least 2% market share in 2022. As shown in this figure, AdX has meaningfully higher take rates than most of its rivals; with the exception of [REDACTED] and [REDACTED] in 2020, it charges a take rate that is 10 percent higher than the other ad exchanges depicted.

Figure 30. AdX and third-party exchange US indirect web non-video take rates relative to AdX take rate (2020–2022)



Source: Backup materials for Israel Report, Figure 75: Israel exchange panel. Backup materials for Lee Initial Report, Figure 91: Exchange panel.

Notes: The figure is limited to indirect web non-video transactions. The legend contains the share of US indirect open-web display impressions in 2022 in parentheses for each exchange. Sample includes AdX and the five non-Google exchanges with the highest share of impressions in 2022, for which the data allow me to calculate take rates for indirect open-web display.

Expert Rebuttal Report of Robin S. Lee, PhD



Robin S. Lee, PhD

February 13, 2024
Date

Errata for the February 13, 2024 Expert Rebuttal Report of Robin S. Lee, PhD

Location	Original Text	Corrected Text
Paragraph 35	In this matter, the strength and importance of indirect effects for customer decisions will tend to vary across ad tech products <i>and</i> by direction	In this matter, the strength and importance of indirect network effects for customer decisions will tend to vary across ad tech products <i>and</i> by direction
Paragraph 165	Last, Dr. Israel again points to purported “multi-homing” and “substitution” statistics in Prof. Simonson’s survey, but again neither support his assertion that advertisers view app inventory as a close substitute for web inventory	Last, Dr. Israel again points to purported “multi-homing” and “substitution” statistics in Prof. Simonson’s survey, but again neither support his assertion that advertisers view instream video inventory as a close substitute for web inventory
Paragraph 176	With respect to the first point, as I explained above in Section IV.A.3, simply using two different sales channels does not equate to close substitution between them	With respect to the first point, as I explained above in Section IV.A.4, simply using two different sales channels does not equate to close substitution between them
Paragraph 257	Paragraph 257 is formatted as a paragraph.	For clarity, Paragraph 257 is a block quote from the document cited in footnote 417. For convenience, no change is made to the paragraph numbers.
Paragraph 315	Paragraph 315 is formatted as a paragraph.	Paragraph 315 is heading “IV.F” and should read as corrected: “ IV.F Dr. Dr. Israel’s single two-sided market for ad tech tools is not appropriate for evaluating the competitive effects of Google’s conduct in the ad tech stack ” For convenience, no change is made to the paragraph numbers.
Heading IV.E.3	IV.E.3 A single market for all ad tech products obscures rather than illuminates the relevant competition	Heading IV.E.3 should read as corrected: “ IV.F.1 A single market for all ad tech products obscures rather than illuminates the relevant competition”
Heading IV.E.4	IV.E.4 Dr. Israel’s proposed competitive constraints on “individual component markets” within ad tech do not survive scrutiny	Heading IV.E.4 should read as corrected: “ IV.F.2 Dr. Israel’s proposed competitive constraints on “individual component markets” within ad tech do not survive scrutiny”

Heading IV.E.5	IV.E.5 Dr. Ghose’s discussion of “alternative pathways and tools” obscures the central role played by publisher ad servers, ad exchanges, and advertiser ad networks	Heading IV.E.5 should read as corrected: “ IV.F.3 Dr. Ghose’s discussion of “alternative pathways and tools” obscures the central role played by publisher ad servers, ad exchanges, and advertiser ad networks”
Heading IV.F	IV.F Relevant geographic markets for publisher ad servers, ad exchanges, and advertiser ad networks	Heading IV.F should read as corrected: “ IV.G Relevant geographic markets for publisher ad servers, ad exchanges, and advertiser ad networks”
Heading IV.F.1	IV.F.1 Dr. Israel incorrectly dismisses the appropriateness of a worldwide geographic market	Heading IV.F.1 should read as corrected: “ IV.G.1 Dr. Israel incorrectly dismisses the appropriateness of a worldwide geographic market”
Heading IV.F.2	IV.F.2 My conclusions do not change whether the product markets are analyzed on a worldwide or US	Heading IV.F.2 should read as corrected: “ IV.G.2 My conclusions do not change whether the product markets are analyzed on a worldwide or US basis ”
Paragraph 345	Paragraph 345 is formatted as a paragraph.	For clarity, Paragraph 345 is a block quote from the document cited in footnote 532. For convenience, no change is made to the paragraph numbers.
Paragraph 436	When controlling for changes in the composition of publishers over time, DFP fees remained relatively flat between August 2014 and March 2023	When controlling for changes in the composition of publishers over time, DFP fees remained relatively flat between February 2014 and March 2023
Paragraph 493	Paragraph number 493 is formatted as red text.	As corrected, paragraph number 493 is properly formatted as black text.
Appendix A		Appendix A begins with “In addition to the materials listed below, I incorporate by reference all materials cited within the footnotes in this report and in my initial report and the accompanying back up materials.”
Appendix A.4	GOOG-DOJ-AT-00517933	GOOG-DOJ-AT-00571933
Footnote 363	I discuss the flaws with this market below in Section IV.G.	I discuss the flaws with this market below in Section IV.F .
Footnote 1022	GOOG-DOJ-AT-00517933, at -934	GOOG-DOJ-AT-00571933, at -934


Robin S. Lee, PhD

MARCH 8, 2024
Date